

## Monitoring Study Group Meeting Minutes

February 23, 2012  
CAL FIRE Shasta-Trinity Unit Headquarters  
Redding, California

The following people attended the MSG meeting: George Gentry (BOF—MSG chair), Dr. Lee MacDonald (CSU), Dr. Richard Harris (public), C. Troy Bartolomei (Shasta Co. Dept. of Public Works), Drew Coe (CVRWQCB), Dennis Hall (CAL FIRE), Clay Brandow, (CAL FIRE), Chantz Joyce (Stewardship Council), Bruce Beck (CAL FIRE), Mike Miles (BOF), Mike Mitzel (SPI), Mathew Boone (CVRWQCB), Rich Klug (Roseburg Resources Co.), Kevin Faucher (CTM), Dianna Thrasher (Sierra Club), Shane Cunningham (CAL FIRE), Debra Hallis (CVRWQCB), Marily Woodhouse (Battle Creek Alliance), Patricia Lawrence (reporter), Justin Augustine (CBD), Stacy Stanish (DFG), Andrew Yarusso (DFG), Don Lindsay (CGS), Steve DeBonis (SPI), Ted James (SPI), Bill Short (CGS), Blaine Nicolls (WM Beaty and Associates), Matt House (GDRCO), Richard Gienger (public), Linda Pankonin (Sierra Club), Stuart Farber (WM Beaty and Associates), Christy Gilbreath (CVRWQCB), Dr. Michael Wopat (CGS), Dr. Cajun James (SPI), and Pete Cafferata (CAL FIRE).

Participants on the GoToMeeting webinar/conference call included: Dr. Sari Sommarstrom (Sommarstrom and Associates), Chris Hipkin (Statewide Forestry Services), Mike Liquori (SWC), Dr. Sue Britting (BOF), Anthony Toto (CVRWQCB), Dr. Matt O'Connor (O'Connor Environmental), Kelly Larvie (CAL FIRE), Mike Laing (NCCFFF), Drew Perkins (SPR), JoAnn Dunn (DFG), Eric Huff (CAL FIRE), Marty Hartzell (CVRWQCB), and Bill Stevens (NMFS).

**[Action items are shown in bold print].**

The meeting began with general monitoring-related announcements:

- The second BOF road rules field workshop will be held on either March 15<sup>th</sup> or March 16<sup>th</sup> at a Redding location. The initial public hearing on the Road Rules, 2011 rule package is scheduled for April 4, 2012. See: [http://www.bof.fire.ca.gov/regulations/proposed\\_rule\\_packages/interagency\\_road\\_rules\\_2010/combinednoticeroadrules122311.pdf](http://www.bof.fire.ca.gov/regulations/proposed_rule_packages/interagency_road_rules_2010/combinednoticeroadrules122311.pdf)
- The Benda and Bigelow California large wood paper presented at the last MSG meeting is still under review and refinement. Dr. Lee Benda hopes to incorporate comments from Dr. Cajun James, Peter Ribar, and Dr. Neil Lassetre in early March, and the goal is to post a draft version of the paper on the MSG website by late March.
- Dr. Carolyn Hunsaker, USFS PSW, announced (through email to Pete Cafferata) that the USFS Pacific Southwest Research Station is conducting a Science Synthesis for the Sierra Nevada covering the past 10 years, to feed into revisions for National Forest Plans. Carolyn is working on aquatic topics for this effort. A handout and one page outline were provided to the group. Topics include forest management and water quality. Carolyn asks that if you have or know of pertinent publications or unpublished studies that should be included in this review, please provide them to her ([chunsaker@fs.fed.us](mailto:chunsaker@fs.fed.us)).
- The public draft of the Southern Oregon/Northern California Coast (SONCC) Coho Salmon Recovery Plan is available for review. Recently, NMFS staff announced that the SONCC comment period has been extended to May 4, 2012. Review the recovery plan at: [http://swr.nmfs.noaa.gov/recovery/soncc\\_draft/SONCC\\_Coho\\_DRAFT\\_Recovery\\_Plan\\_January\\_2012.htm](http://swr.nmfs.noaa.gov/recovery/soncc_draft/SONCC_Coho_DRAFT_Recovery_Plan_January_2012.htm).

- The 30<sup>th</sup> Annual Salmonid Restoration Conference will take place on April 4-7, 2012, at Davis, CA. For additional information, see: <http://www.calsalmon.org/>.
- Dr. Michael Wopat handed out a copy of short article from Nature Geoscience (vol 5, February 2012) titled “Wood and River Landscapes” by Angela Gurnell. The paper is posted at: <http://www.nature.com/ngeo/journal/v5/n2/full/ngeo1382.html>.

### **Reassessment of 5 Counties Management Practices for Protection of Salmonid Habitat**

Dr. Richard Harris provided a PowerPoint presentation titled “County Policies and Practices for Protecting Anadromous Fish Habitat: Humboldt, Del Norte, Trinity, Mendocino, and Siskiyou Counties. This presentation summarizes a report Richard wrote in 2011 for the Five Counties Salmonid Conservation Program (5C) and updates an earlier report prepared in 1998. Richard’s report is posted on the 5C website ([http://www.5counties.org/docs/2011\\_reassessment.pdf](http://www.5counties.org/docs/2011_reassessment.pdf)); earlier reports, road manuals, and numerous project-specific reports are also posted (<http://www.5counties.org/docs.htm>).

Dr. Harris stated that one of the first tasks undertaken by the 5C in 1997 was an assessment of county policies and practices for protecting salmonid habitat. The 1998 assessment found that land development (e.g., grading, riparian and floodplain encroachment, non-point pollution) was adversely impacting fish habitat. Also, road maintenance procedures in use by the counties were not well documented and inventories of county infrastructure affecting salmonid habitat were needed. After the first assessment, several things changed at the state level, including: (1) state coho listing, (2) TMDLs adopted for many five county watersheds, (3) General Construction Permit requirements changed to sites one acre or more (not five), and (4) DFG 1600 agreements became subject to CEQA. Overall, there was increased regulation affecting activities affecting salmonid habitat.

At the county level, several things changed between 1998 and 2008 as well, including: (1) inventories of passage barriers and road-related sediment sources were completed or mostly completed in all counties (~1000 miles of county roads remain to be inventoried), (2) county general plans were revised in two counties, and new or revised ordinances were adopted in three counties, (3) barrier removals took place at 60 locations opening 140 miles of habitat, (4) the 5C roads manual was adopted by NMFS as meeting 4(d) requirements, and (5) there was participation by county staffs in 5C sponsored training on road maintenance and other topics.

For the current assessment, Dr. Harris, 5C staff, Dennis Slota, and county staff conducted a field review to evaluate changes in practices. Additionally, Richard completed an analysis of changes in policies and regulations by reviewing all the county general plans. Activities to evaluate in the field were selected based on the ability of the project to potentially affect fish habitat. Types of projects reviewed included land development, bridges and other types of stream crossings, stream bank stabilization, storm damage repair, fish passage projects, and road maintenance activities.

Regarding land development, the 5C team found that controls over non-point source erosion and hydrology modification have increased dramatically. Grading on upland sites remains an issue when not subject to regulation, or with illegal activities and activities that violate approved plans. Floodplain ordinances and riparian setbacks (buffers) have limited development in riparian and floodplain areas. Evaluation of bridge sites revealed that construction activities have limited short-term impacts, but extensive mitigation measures are generally required. Grant-funded streambank stabilization projects were found to now use bioengineering techniques, as do county projects if they are feasible. Storm damage repair projects reviewed in 1998 following the 1997 flood event and evaluated again in 2008 demonstrate an awareness of potential habitat impacts, and permanent solutions are incorporating fish-friendly measures. Many major grant-funded fish passage projects have been completed in the past decade, with examples shown from Humboldt

and Trinity Counties. Road maintenance practices were found to have radically changed, and now include outslipping. County road crews are currently much better informed through training and use of the 5C roads manual. Stream crossings constructed in the past decade were found to often use innovative approaches where sedimentation and fish passage are issues.

Dr. Harris offered the following additional observations: (1) some of the counties have hired staff or consultants to increase their expertise in fisheries and hydrology, (2) all the counties are suffering hardships due to depressed economic conditions, (3) several new initiative such as design manuals and general plan revisions are in preparation, and (4) all of the counties experience delays and costs due to regulatory procedures required by other agencies. Recommendations include assessing the scope of unregulated and illegal grading, developing an educational program for owners and managers of riparian reserves, and streamlining the regulatory process affecting projects that benefit fish habitat.

### **Battle Creek Interagency Task Force Report and Discussion on Recommendation No. 10**

Mr. Drew Coe, CVRWQCB, summarized the Battle Creek Interagency Task Force report titled “A Rapid Assessment of Sediment Delivery from Clearcut Timber Harvest Activities in the Battle Creek Watershed, Shasta and Tehama Counties, California.” The PowerPoint is posted at: [http://www.bof.fire.ca.gov/board\\_business/other\\_board\\_actions/battle\\_creek\\_report/battlecreekassessment.pdf](http://www.bof.fire.ca.gov/board_business/other_board_actions/battle_creek_report/battlecreekassessment.pdf).

Battle Creek is a 370 mi<sup>2</sup> watershed draining the area from Mt. Lassen down to its confluence with the Sacramento River near Anderson. The Battle Creek Salmon and Steelhead Restoration Project is a major component of a federal effort for recovery of listed salmonid species in the Sacramento Valley. Recent rates of clearcutting by Sierra Pacific Industries (SPI) in the Battle Creek watershed led to public concern that state approval of SPI logging plans runs counter to the goals of the restoration program. In response, the state formed the Battle Creek Task Force to “evaluate whether timber operations associated with SPI clearcut harvesting in Battle Creek has resulted in observable erosion and subsequent delivery of sediment which has resulted in violation of state law or observable negative impacts to fisheries.” Two teams were formed composed of local Redding-based Review Team agency personnel from DFG, CVRWQCB, CGS, and CAL FIRE. Mr. Coe presented background information showing that sediment delivery depends on the proximity of the erosion source to the stream channel, as well as the watershed drainage density, which is low in the Battle Creek drainage due to the young volcanic formations present.

The task force teams assessed the potential for water quality impacts at 135 non-randomly selected high risk sites in 5 planning watersheds during September 2011. Of these sites, 55 were clearcut harvest units, 39 were road crossings of watercourses, 24 were watercourse-adjacent road segments, 6 were watercourse-adjacent landings, 5 were tractor crossings of watercourses, and 3 were associated with other sources of erosion. Highest site selection priority was placed on clearcuts with buffers on fish-bearing streams that had overwintered, tractor logged units, units with steeper slopes, and units with more erodible soil types. The teams determined if sediment was delivered at the site, its relative magnitude [low (<1 yd<sup>3</sup>), moderate (1-10 yd<sup>3</sup>), or high (>10 yd<sup>3</sup>)], the type of erosion, and the source of the erosion feature.

Road crossings and watercourse-adjacent road segments were found to deliver sediment to channels 69% and 67% of the time, respectively. All 5 tractor crossings delivered sediment, but generally at low volumes. Only one instance of sediment delivery was found directly associated with a clearcut, and this event was associated with a Forest Practice Rule violation. Crossing sediment was mainly associated with road approaches and often found on ungated publicly-maintained roads. Watercourse-adjacent road segments were found to most likely deliver sediment when they were within 30 ft of the channel. Landings generally were found to deliver no sediment due to high surface cover provided by chipping operations.

Very low direct sediment delivery from clearcut units was attributed to: (1) strategic placement of drainage structures (waterbars) on skid trails, (2) contour ripping of units that reduced soil compaction, (3) relatively high surface cover, and (4) use of required buffer strips (WLPZs) for infiltrating runoff and filtering sediment. These results are consistent with those reported by Litschert and MacDonald (2009) for an extensive sample of clearcuts in the Sierra Nevada. Mr. Coe stated that clearcuts were not found to be causing observable negative impacts to fish habitat, but roads can cause chronic sedimentation. He cautioned that the Task Force did not examine indirect effects of clearcutting, such as increases in peak flows, which can elevate bank erosion and create higher turbidity levels. Also, no large stressing storms have occurred in the watershed in recent years to test erosion control practices. Overall Task Force conclusions included: (1) there were no significant direct water quality impacts related specifically to harvest within clearcuts units, (2) most sediment delivery comes from road crossings and watercourse-adjacent road segments, and (3) violations of Forest Practice Rules occurred, but were generally rare and appeared to be of relatively minor significance at scales relevant to salmonids.

The Task Force developed ten recommendations regarding forest-related land use activities in the Battle Creek watershed; these recommendations are provided in the final report (see: [http://www.bof.fire.ca.gov/board\\_business/other\\_board\\_actions/battle\\_creek\\_report/final\\_battlecreek\\_taskforce\\_report.pdf](http://www.bof.fire.ca.gov/board_business/other_board_actions/battle_creek_report/final_battlecreek_taskforce_report.pdf)). Recommendation No. 10 states: Engage in follow-up study to relate results of the assessment to water column data (turbidity) and in-channel physical habitat characteristics. To address this recommendation, Mr. Coe presented grab water sample turbidity data collected by both the Battle Creek Alliance and the CVRWQCB at numerous sampling locations in the Battle Creek basin. Elevated Alliance turbidity readings were attributed to erosion coming from county roads. Overall, 48.5% of the Alliance samples were below 5 NTUs, 85% below 10 NTUs, and 93% below 25 NTUs. CVRWQCB samples had very similar values to those reported by the Battle Creek Alliance, with elevated values associated with Rock Creek Road. Median turbidity values for both the Alliance and CVRWQCB sampling stations were all below 25 NTUs, where fish feeding impacts occur. Coleman Fish Hatchery turbidity data were displayed for several years and similarly revealed very low turbidity values (mostly under 10 NTUs). Instream monitoring data collected by Terraqua for 2001-2002 and 2006 were also briefly discussed, but insufficient data have been collected to describe true trends for instream conditions in the watershed. Finally, potential changes in peak flows were addressed. A chart from Grant et al. (2008) was used to describe the likelihood of logging-related peak flow increases in Battle Creek. Preliminary discussion with Dr. Gordon Grant, USFS-PNW, appears to indicate that low drainage density in this young volcanic terrain (particularly in the northern part of the basin) reduces the potential for large changes in peak flows. Mr. Coe stated that further work regarding recommendation no. 10 could include: (1) more instream channel monitoring (particle size, pool parameters, macroinvertebrate density and diversity, turbidity), and (2) use of portions of watershed analysis modules to further our understanding of watershed processes in this basin.

Troy Bartolomei, Deputy Director, Shasta Co. Department of Public Works, addressed the group following Mr. Coe's presentations. He stated that Shasta County has prescriptive rights to county roads, but not ownership. Generally these are old roads that were not properly designed. In the past, road maintenance work has not received a high level of oversight and safety issues were the main concern (not environmental issues). Recent discussions with CVRWQCB staff and SPI's Dr. Cajun James were stated as increasing County Public Works staff awareness of sediment issues and changing their perspectives. Inventories of erosion source areas have been undertaken along Rock Creek road and road improvement work here is anticipated to begin this summer. Additional funding sources are needed, however, to complete the amount of work anticipated. SPI has offered expertise and materials to help with the road improvement work. Cajun James added that there is a high level of cooperation currently occurring between SPI and Shasta County Public Works. Lee MacDonald concluded this discussion by stating that it is exciting to see counties like Shasta County stepping up to improve roads and reduce sediment movement into critical fish habitat.

## **SPI Battle Creek Instream Monitoring and Judd Creek Cooperative Instream Project Update**

Dr. Lee MacDonald, Colorado State University, provided the MSG with a PowerPoint presentation he developed with Dr. Cajun James, SPI, on SPI's Battle Creek instream monitoring work to date and an update on the Judd Creek cooperative instream monitoring project. The overall objectives of this work include: (1) long-term characterization of flows from SPI's portion of the greater Battle Creek watershed, and (2) assessment of the effects of forest management and roads on water quality in the Judd Creek watershed through implementation of a long-term cooperative study. Instream monitoring stations in the Battle Creek watershed include three stations on Bailey Creek (upper, middle, and lower, operated since 2002-2003), and Rock Creek, North Fork Digger Creek, and South Fork Digger Creek (since fall 2011). The Judd Creek study began in 2000, and has been a BOF MSG cooperative instream monitoring project since 2004. Following the study of 3 initial clearcuts logged in 2000 in the Judd Creek basin, road work took place in 2007, 13% of the basin was clearcut with ~20 acre blocks (41 units) in 2009, and intensive hillslope assessments began in the summer of 2011. The Judd Creek study plan is posted at: [http://www.bof.fire.ca.gov/board\\_committees/monitoring\\_study\\_group/msg\\_archived\\_documents/msg\\_archived\\_documents/judd\\_creek\\_final\\_prospectus\\_msg\\_maps.pdf](http://www.bof.fire.ca.gov/board_committees/monitoring_study_group/msg_archived_documents/msg_archived_documents/judd_creek_final_prospectus_msg_maps.pdf).

Dr. MacDonald stated that turbidity is measured at monitoring stations at 15 minute intervals with YSI 6820 multi-parameter sondes. Fifteen minute data is aggregated to hourly and daily averages. Bubblers are used to document stream discharge and weather stations record precipitation inputs. Mean daily turbidity data for Bailey Creek shows that 80-90% of the time turbidity values range from 0-5 NTUs (clear water). Four to 18% of the time, turbidities range from 6-25 NTUs, and very few days have mean daily turbidity values from 26-50 NTUs. Overall, 99% of the daily means are "clear" and ~1% are slightly turbid (>25 NTUs). These data match those collected by grab samples reasonably well. Hourly data has been found to be nearly identical to daily data. The number of hours per day with >25 NTUs are mostly at 1-10 hours (i.e., short duration turbidity events). Higher turbidity values have not been linked to forest management activities. Turbidity has been found to be highly variable in space and time, and higher individual values are not easily explained. Lee summarized the data collected to date at the three Bailey Creek stations as showing very low turbidities, with durations of >25 NTU lasting only a few hours.

Data from the three new Battle Creek watershed stations are limited (~100 days). To date, turbidity values collected are very similar to those documented at the three Bailey Creek stations, with very low values. Again, values greater than 25 NTU are infrequent and of very short duration. Rock Creek turbidity values have been higher than those recorded at the North and South Fork Digger Creek monitoring stations.

Intensive hillslope monitoring began in the Judd Creek basin in 2011, measuring percent ground cover and rilling in 10 of the steeper clearcut units. Also, 32 sediment fences were installed and a detailed road inventory was completed. Five instream monitoring stations have been in operation since the winter of 2004-2005. To date, no evidence of sediment transport to stream channels has been observed from the clearcut units. No rills or sediment plumes >10 m were observed at the clearcut-buffer boundaries. Landings covered with chipped material have displayed no surface erosion; unchipped landings have had short rills and sediment plumes not connected to streams. Thirteen km of roads have been surveyed and erosion models such as WEPP and SEDMODL2 will be run to determine relative erodibility. Most roads show little evidence of rilling and drainage features are almost always effective at diverting water into uncompacted soil. A few problematic road segments have been identified, particularly at throughcuts.

Cajun James added that SPI is committed to collecting long-term water quality data at the Battle Creek and Judd Creek stations, and that the company will continue to provide reports on the data collected at these stations.

## **Update on French Creek V-Star Monitoring**

Mr. Stu Farber, WM Beaty & Associates, updated the MSG on French Creek V-star monitoring work. Dr. Sari Sommarstrom provided earlier presentations to the MSG on the French Creek project in February 2005 and July 2009. Dr. Sommarstrom's 2005 PowerPoint presentation is posted at:

[http://www.bof.fire.ca.gov/board\\_committees/monitoring\\_study\\_group/msg\\_archived\\_documents/msg\\_archived\\_documents/\\_frenchcreekwag\\_04saris.pdf](http://www.bof.fire.ca.gov/board_committees/monitoring_study_group/msg_archived_documents/msg_archived_documents/_frenchcreekwag_04saris.pdf). The updated French Creek report Stu summarized at the current meeting is posted at:

<http://www.wmbeaty.com/management/FrenchCreekVStar2011FINAL.pdf>.

In brief, the French Creek Watershed Advisory Group (FCWAG) was formed in 1990 to reduce sediment delivery in the French Creek watershed, and to reduce, as much as feasible, the potential for negative cumulative impacts. Stakeholders and partners included public and private landowners, federal, state and county agencies, and local landowner associations and conservation groups. Earlier assessments had shown that the French Creek watershed was delivering significant amounts of decomposed granitic sediment to the Scott River. The French Creek basin is approximately 32 mi<sup>2</sup> and 63% is underlain by decomposed granitic (DG) soils, with a mixed ownership. French Creek was found to be producing sediment at approximately 2,500 t/mi<sup>2</sup>/yr, with the majority coming from road cuts, fills, and the running surface. A French Creek Road Management Plan was adopted in 1992 to address 75 miles of roads on DG soils. Thirty eight miles of unsurfaced road were recontoured and rocked, and several other treatments were implemented.

A comprehensive monitoring plan was instigated in 1992 to determine changes in sediment levels, determine fish population changes, and evaluate the road management plan's effectiveness. V-star monitoring, documenting the relative volume of fine sediment in pools, was undertaken in 6 reaches, with 12 pools per reach randomly selected. In 1992, V-star was 32%, but was reduced to less than 10% in 1993, and it has remained low in the one reach that is still monitored (13.5% in 2011). Mean pool water volume, the amount of pool habitat available for rearing anadromous salmonids, also continues to improve compared to 1992 levels. Juvenile steelhead numbers have increased and at least one cohort of coho salmon has increased population estimates (data through 2005). A key lesson learned from this project was the benefit of using "joint fact-finding" by all stakeholders in the monitoring program, developing mutual trust and improved understanding of the data. The quality of the work conducted by the FCWAG is shown by the group being awarded the 1996 National Watershed Award for voluntary efforts.

## **Brief Update on Section V Technical Advisory Committee (VTAC) Activities**

Pete Cafferata provided a brief update on Anadromous Salmonid Protection (ASP) Rule Section V Technical Advisory Committee (VTAC) activities. The VTAC has finalized its pre-consultation form and an accompanying example. Additionally, a draft version of a comprehensive guidance document has been produced. **Considerable more editing and additions will occur in the near future. The VTAC is developing short paragraphs from each of the Review Team agencies describing how they will conduct review of Section V site specific proposals, which will be included in the guidance document.** One pilot project is under development with Green Diamond Resource Company in Humboldt County, and other potential projects are being considered with Collins Pine Company and Big Creek Lumber Company. Mike Liquori, VTAC Chair, described a proposal he is developing for a SBIR Phase II grant addressing active riparian management. **He encouraged MSG participants to write support letters for his proposal.** The next VTAC meeting is scheduled for March 23<sup>rd</sup> at Howard Forest near Willits.

### **Public Comment/New and Unfinished Business**

Richard Gienger encouraged MSG participants to take part in the Board's Forest Practice Committee review of the cumulative impact assessment Forest Practice Rules and provide input on how to address biological impacts.

### **Next Monitoring Study Group Meeting Date**

The next MSG meeting date was tentatively planned for mid-May 2012, with the location to be determined. When a definite date, venue, and agenda are available, this information will be emailed to the MSG contact list.